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discussed under the fertilization of the egg, but no practical work is suggested. Some of the objects suggested for study are not of sufficiently wide or abundant occurrence to make them generally accessible, *e.g.*, the eggs of Thysanozoön, Sida, Myzostoma, Siredon, and the repetition of Boveri's experiment on the fertilization of enucleated egg fragments. In spite of these limitations, the work will be of great value to all who are giving courses on practical cytology.

Davenport's Statistical Methods.[1] — This work is intended to meet "the call for a simple presentation of the newer statistical methods in their application to biology," and seems an admirable handbook for the purpose. It consists of definitions and explanations of methods, including "the seriation and plotting of data and the frequency of the polygon," etc., with a selected bibliography of the subject, the whole occupying less than fifty pages, followed by about one hundred pages of formulas and logarithmic tables. Chapter V (pp. 38, 39) gives "Some Applications of Statistical Biological Study." While the "newer statistical methods" are admirably suited to the investigation of certain special problems, which may be of the highest interest and importance, they seem too minute and detailed, and to require the expenditure of too much time and labor, to be of very broad application, such as the author apparently contemplates. Thus, it is said: "The origin of species through geographical segregation can be studied by the determination of *place-modes;* that is, the modal condition of specific characters of one and the same species in various localities. The progress of specific differentiation will be measured by the change in place-modes from decade to decade, or by the formation of a binomial curve in the place of a modal one; by the gradual separation of the two modes of a binomial curve." Theoretically this is possible, but taking into account what it implies, even for a single species, does it not border on the chimerical, or at least on the impracticable? First is necessarily involved a geographical area of considerable extent — at least hundreds of miles square, under ordinary conditions of topography — within which many observation stations must be chosen, and at which work must be continued "from decade to decade," and detailed measurements made of every measurable feature of many thousands of individuals. And this not only for one species but for a whole fauna, as: "A basis for an arbitrary *distinction between species and varieties* may be gained by determining a degree of divergence and of isolation which shall be used to distinguish the two. A degree of divergence of thrice the standard deviation has been suggested as a convenient line between species and varieties." The idea of such a broad application of the "newer statistical methods," and for such purposes, seems at present Utopian, because simply impracticable. Again, an arbitrary standard of deviation which may be perfectly legitimate for one group, as a genus or family, would prove inapplicable for another group of similar grade within even the same class.

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[1] *Statistical Methods* with special reference to Biological Variation. By C. B. Davenport, Ph.D., Instructor in Zoölogy at Harvard University. First edition. First thousand. New York, John Wiley & Sons. London, Chapman & Hall, Limited, 1899. — 12mo, 148 pp.

As already said, the scheme is theoretically admirable, and is no doubt applicable to many special problems, but is too costly in time, material, and labor to be of the wide or general applicability in determining species and subspecies, or the methods and causes in the segregation of geographic forms, apparently contemplated by the author of the present manual. The gross methods already in vogue, being tolerably efficient for temporary and tentative purposes, will probably hold the field for a while at least, so that it will be in the remote future when, through the plotting of curves and the use of logarithmic tables, we shall see "by the use of the quantitative method biology . . . pass from the field of the speculative sciences to that of the exact sciences" (p. 39).

J. A. A.

The question of the former existence of an Antarctic continent with a flora and fauna of its own, the remnants of which are still recognizable in the southern continents, has been brought into prominence recently, and we should like, in this connection, to call attention to a paper published in Australia that, although issued four years ago, has not been noticed sufficiently in other countries. C. Hedley[1] starts from the fact mentioned already by early travelers, that Tasmania, Australia, New Zealand, South America, and partly also South Africa contain certain forms of life in common which are not represented elsewhere, and concludes that this community of type cannot be explained but by community of origin, and that we have to look for a connection of these now separated parts by former land bridges.

After discussing and criticising the theory of Hutton, which con-

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[1] Hedley, C. Considerations on the Surviving Refugees in Austral Lands of Ancient Antarctic Life, *Roy. Soc. N. S. Wales.* Aug. 7, 1895.